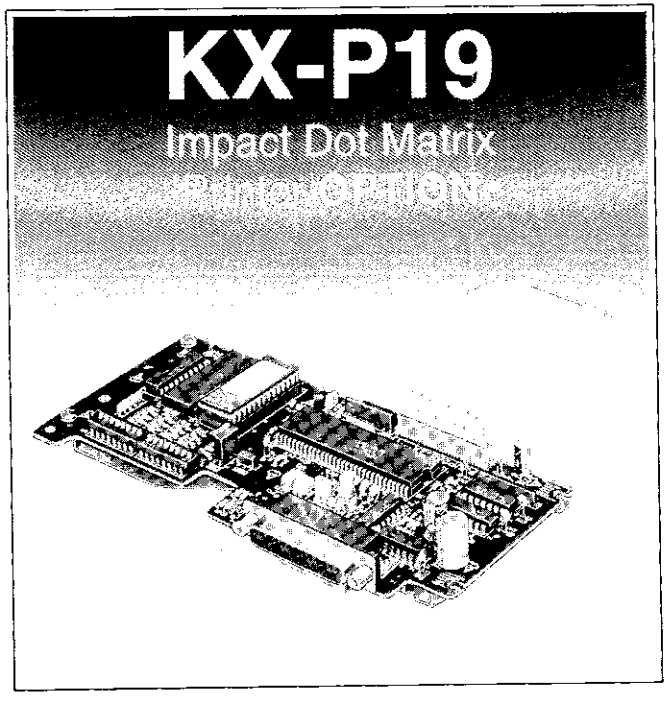
RS232C Adapter Manual



Panasonic

FOR USERS IN UNITED STATES ONLY

This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications set forth in Subpart J of Part 15 of the FCC Rules. If this equipment does cause interference to radio or television reception which can be determined by turning the equipment on and off, use the equipment in another location and/or utilize an electrical outlet different from that used by receiver. The user should use special accessories, such as a shielded cable, as recommended in these operating instructions, in order to continue to meet FCC emission limits and not possibly interfere with nearby radio and television reception.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

L'interférence radioélectrique générée par cet appareil numérique de type B ne dépasse pas les limites énoncées dans le Règlement sur les perturbations radioélectriques, section appareil numérique, du Ministère des Communications.

Caution:

- To prevent damage to your printer and computer, do not use the parallel interface connector when the RS-232C adapter board is installed in the printer.
- Cable: Use a shielded cable 2 meters or less in length.

Any details given in these Operating Instructions are subject to change without notice.

OUTLINE

- This board is equipped with the RS-232C and current loop (20 mA) interface, and is used for asynchronous data transfer systems with transferring speed of 75~19200 baud.

- The interface condition (RS-232C or Current loop) is selectable by a jumper setting on the serial board.

- 8K bytes of buffer memory included in the circuit allows the computer to send large quantities of data to the printer quickly, which substantially reduces the time your computer is busy while waiting for the printer to catch up.

- Since the CPU mounted on the serial board transforms serial data into parallel data, bit image printing can be executed.

- Many functions (shown below) can be set by two 8-set DIP switches on the serial board:
  - Baud rate
  - Parity check and parity bit
  - Data word length
  - Designation of signal polarity DTR (or reverse channel)
  - Designation of number of bytes remaining in the buffer
  - Selection of buffering procedure (enable, disable)
  - Selection of DTR, X/ON-X/OFF and ETX/ACK protocol
  - Self test

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1. Preparation

A Parts and Accessories

After the unit has been unpacked, check that the parts and the accessories below are accounted for.

(1) Serial interface board 1

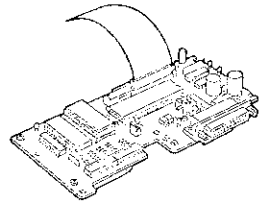
(2) Serial interface board securing red screw A 3

(3) Serial interface board securing red screw B 2

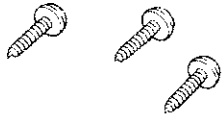
(4) Hexagonal screw 2

(5) Spacer 1

Serial interface board

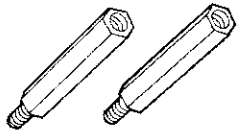


Red screw A

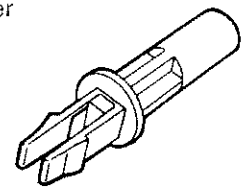


Red screw B

Hexagonal screw



Spacer



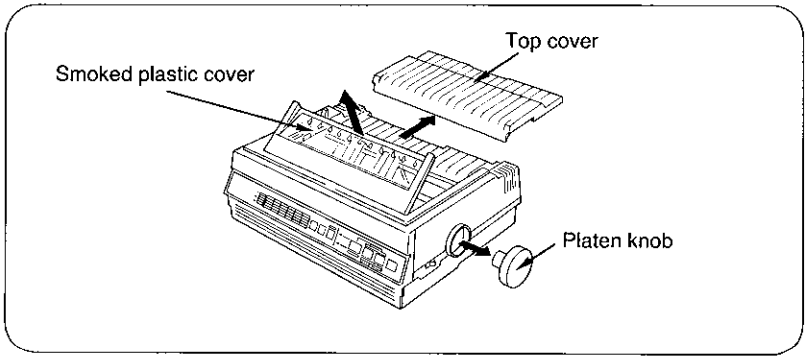
B Installation

Caution: Ensure that the power cord is disconnected before installation of serial interface board.

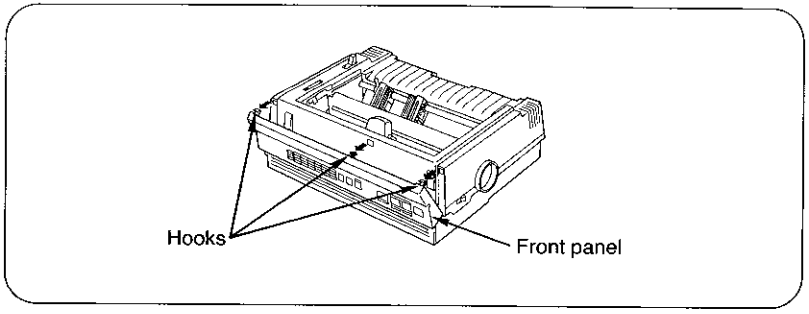
To install the serial interface board, refer to either method (A) or (B) depending upon your printer. If your printer is not covered in either (A) or (B), please refer to your printer manual or consult your dealer.

(A) KX-P1124

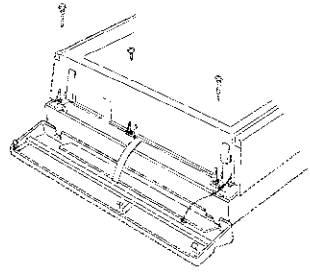
(1) Remove the smoked plastic cover, top cover and the platen knob.



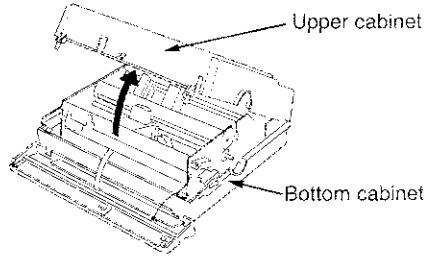
(2) To remove the front panel, release three hooks by pulling the upper side of the front panel.



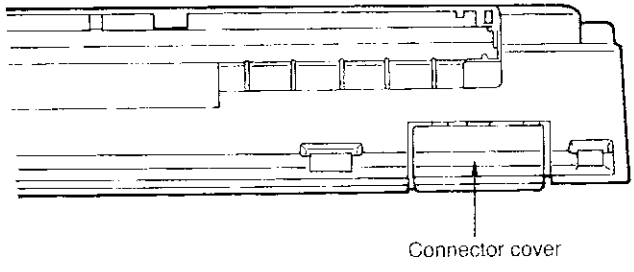
(3) Remove the three screws from the upper cabinet.



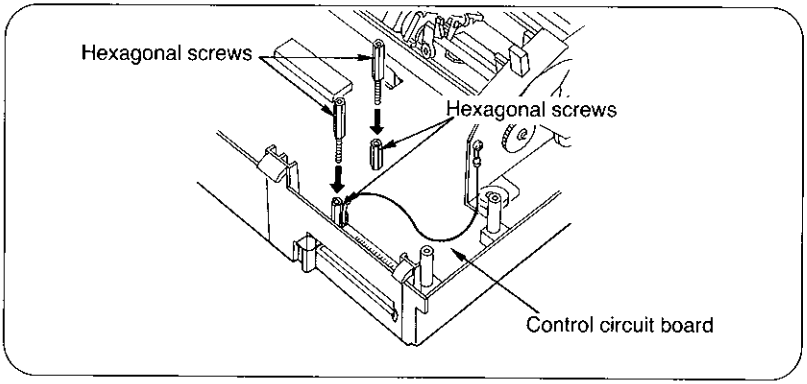
(4) Carefully raise and remove the upper cabinet from the bottom cabinet.



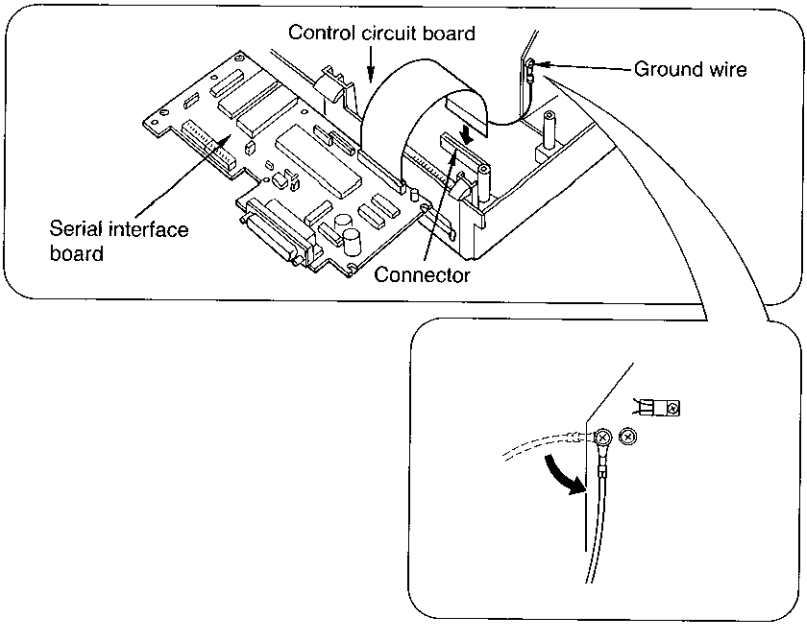
(5) Remove the connector cover from the rear of the upper cabinet.



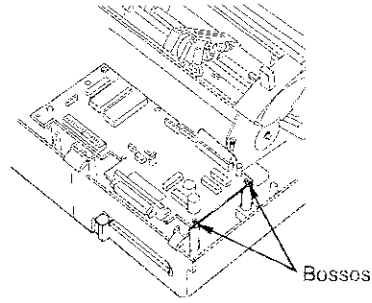
(6) Screw the hexagonal screws to the hexagonal screws on the control circuit board inside the printer.



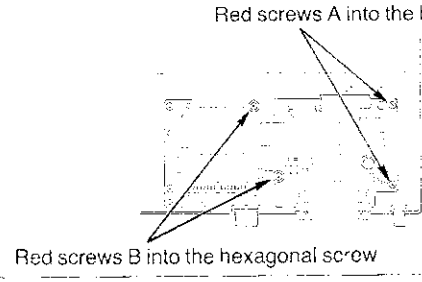
(7) Connect the cable of the serial interface board to the connector on the control circuit board.



(8) Insert the serial interface board at an angle to be placed horizontally on two hexagonal screws and two bosses.



(9) Secure the serial interface board with two red screws A and two red screws B.



(10) Set the computer interface and the interface function switches (refer to Sections 2 and 3).

(11) Replace the upper cabinet, front panel, smoked plastic cover, top cover and platen knob.

Note:

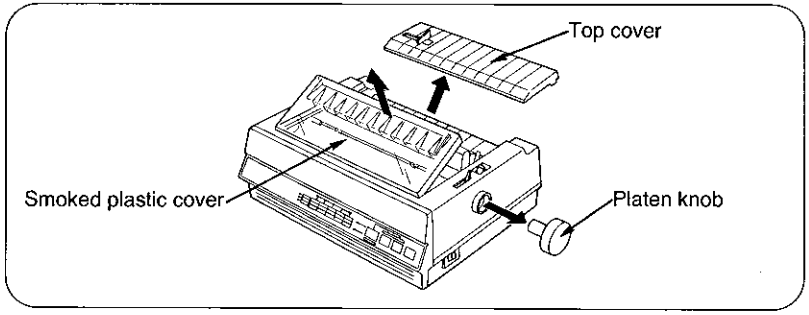
After installation, the following parts will be unused.

Red screw A 1

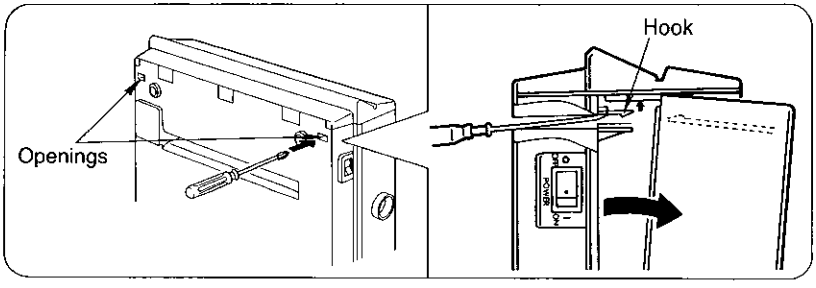
Spacer 1

(B) KX-P1180, KX-P1191

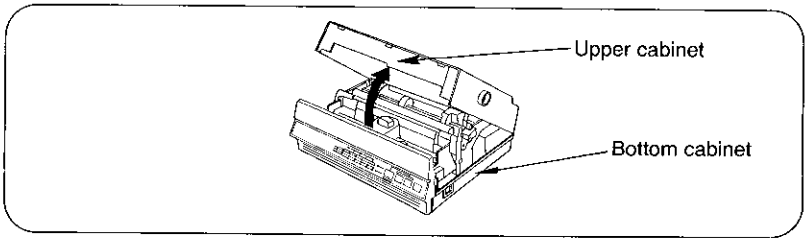
(1) Remove the smoked plastic cover, top cover and the platen knob.



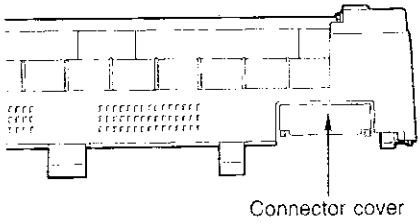
(2) To remove the upper cabinet, raise the unit and insert a screwdriver [Philips ¼" (6 mm)] straight in the center of the openings. Push the screwdriver to release the hooks.



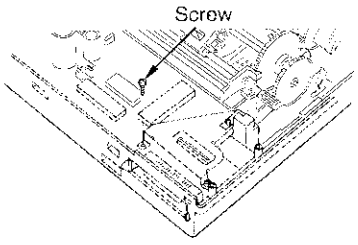
(3) Carefully raise and remove the upper cabinet from the bottom cabinet.

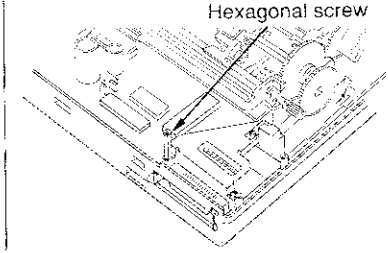


(4) Remove the connector cover from the rear of the upper cabinet.

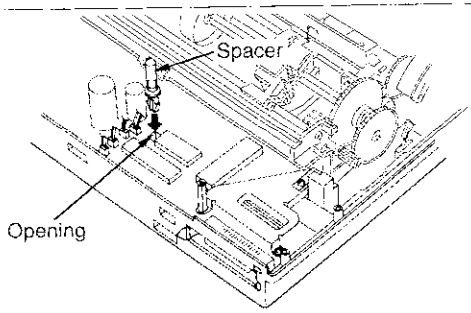


(5) Remove the screw from the bottom panel, and then install the hexagonal screw.

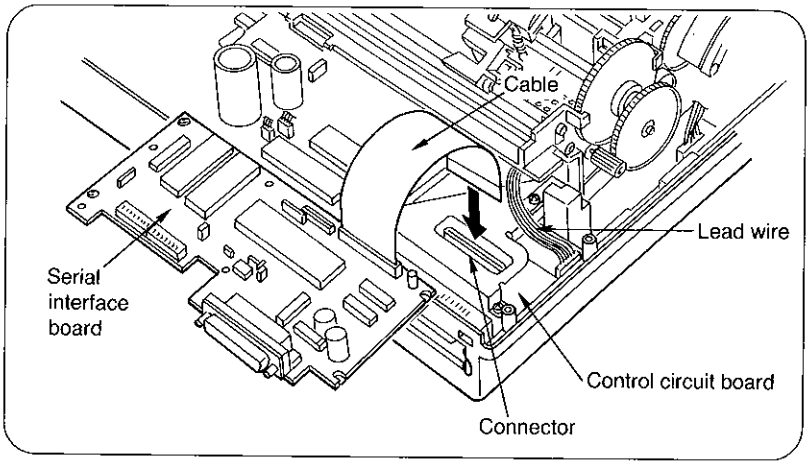




(6) Install the spacer in the opening of the control circuit board.

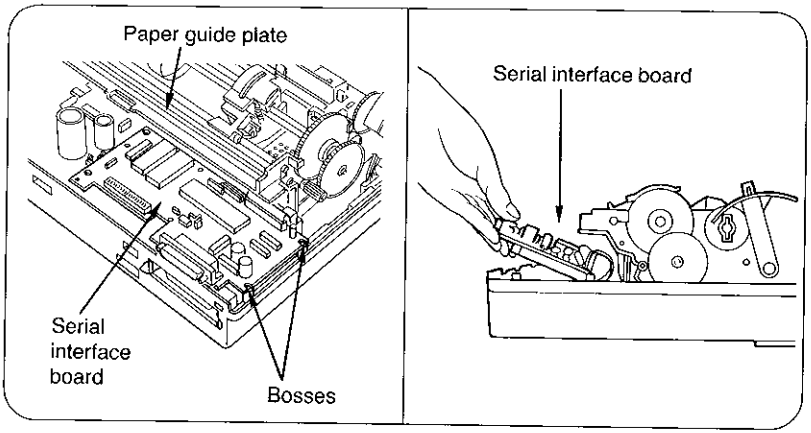


(7) Connect the cable of the serial interface board to the connector on the control circuit board inside the printer.

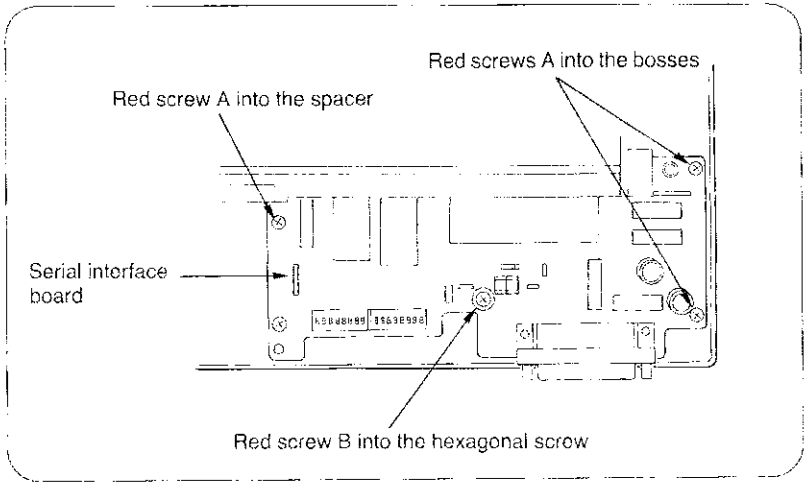


Note:
Push the lead wire to the left side under the paper guide plate.

(8) Tuck the cable under the paper guide plate and insert the serial interface board at an angle to be placed horizontally on the spacer, hexagonal screw and two bosses.



(9) Secure the serial interface board with the three red screws A and one red screw B.



(10) Set the computer interface and the interface function switches (refer to Sections 2 and 3).

(11) Replace the upper cabinet, smoked plastic cover, top cover and platen knob.

Note:

After installation, the following parts will be unused.

Red screw B 1

Hexagonal screw 1

2. Setting of the Computer Interface

- Make sure the settings for the computer interface and the printer interface match.

- Printer interface function settings at shipment:
  1. RS-232C
  2. Buffer: enable
  3. Protocol: X/ON-X/OFF
  4. Baud rate: 1200 Baud
  5. Word length: 8 bit
  6. Parity check: No check

3. Setting the Interface Function Switches

When setting the printer interface function switches, please follow the procedures outlined below. Make sure printer is turned off.

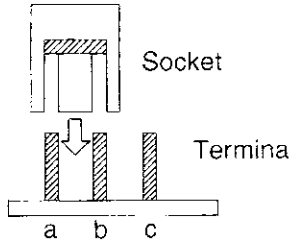
Procedures

1. RS-232C or Current loop selection
2. Buffer setting
3. Protocol setting
4. Baud rate setting
5. Word length selection
6. Parity check setting
7. Designation of the signal polarity of DTR
8. Designation of number of bytes remaining in the buffer

A Selection of RS-232C/Current Loop

(1) Setting RS-232C

Connect J101 terminals a and b (refer to this manual "Jumper Settings" on page 22 and 23) with the socket provided.



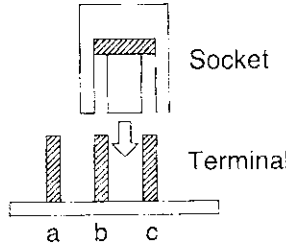
Note: When setting protocol set the DIP switches as follows.

	X/ON-X/OFF	EXT/ACK	DTR
SW2-7	OFF	OFF	ON
SW2-8	OFF	ON	X

X: Irrelevant

(2) Setting Current Loop

Connect J101 terminals b and c (refer to this manual "Jumper Settings" on page 22 and 23) with the socket provided.



Note: 1) When the computer has no current source, connect J104, J105, J106 and J107 (refer to this manual "Jumper Settings" on page 22 and 23) to supply signal current.

2) When setting protocol set the DIP switches and Jumper as follows.

	X/ON-X/OFF	EXT/ACK	DTR
SW2-7	OFF	OFF	ON
SW2-8	OFF	ON	X
J103*	Connect a-b	Connect a-b	Connect b-c

*Use the socket provided on J102 for connection of J103.

B Setting the Baud Rate

The printer baud rate can be set to that of the computer by using DIP switches SW1-5, SW1-6, SW1-7 and SW1-8.
Be sure to turn off the power of the printer before setting baud rate.

Switch / Baud rate	SW1-5	SW1-6	SW1-7	SW1-8
75	ON	ON	ON	ON
110	ON	ON	ON	OFF
134.5	ON	ON	OFF	ON
150	ON	ON	OFF	OFF
200	ON	OFF	ON	ON
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200*	ON	OFF	OFF	OFF
1800	OFF	ON	ON	ON
2400	OFF	ON	ON	OFF
4800	OFF	ON	OFF	ON
9600	OFF	ON	OFF	OFF
19200	OFF	OFF	ON	ON

*Factory setting

C Setting the Word Length

Designate a 7 or 8 bit word length by setting DIP switch SW1-1.

Pin number of the DIP switch	Function	Factory setting
SW1-1	ON: 7 bit data word length OFF: 8 bit data word length	OFF

- Word length
  - (a) Start bit: 1 bit
  - (b) Data bit: 7 or 8 bit (Operator selectable)
  - (c) Parity bit: Odd, even or no parity (Operator selectable)
  - (d) Stop bit: 1 bit or more

D Selection of Parity Check

"Parity check" is an error-checking system to check received data errors.

Setting

1. **Setting parity check (ON/OFF)**
   Set DIP switch SW1-2 to match that of the computer.

2. **Selecting odd/even parity**
   When the computer is using a parity check system, set DIP switch SW1-3 to odd or even parity to match that of the computer.

Pin number of the DIP switch	Function	Factory setting
SW1-2	ON: With parity check OFF: Without parity check	OFF
SW1-3	ON: Even parity OFF: Odd parity	OFF

Parity Check

This system checks whether the total number of "1" bits in a data word is "odd" or "even", and adds a parity bit in order to standardize the total bits of a transferred word to an "odd" or "even" number. When the total number of bits (including parity bit) is an "even (odd)" number, the word has "even (odd)" parity. Parity check is therefore an error-checking system where the total number of bits in a transferred word is calculated, and a comparison between the total numbers of bits and "even (odd)" parity is made.

If an " * " is printed out when using parity check, there is a parity error. In this case, there is an inconsistency in parity selection between the computer and the printer.

Therefore, please make the adjustment so that both devices are using the same parity.

E Designation of Signal Polarity of DTR (or Reverse Channel)

This signal is sent to tell the computer that the printer temporarily can not accept data. Select DTR control (ON) by DIP switch SW2-7 and then adjust the signal polarity of DTR to match that of the computer by setting DIP switch SW1-4. If the DTR control is disabled (OFF) the DTR signal is held "mark" or "space" depending on DIP switch SW1-4.

ON (Reverse): When the signal is "space", the printer tells the computer that it can not accept transferring data.
OFF (Normal): When the signal is "mark", the printer tells the computer that it can not accept transferring data.

SW1-4 is set to "OFF" at shipment.
mark: logic "1" (−12 V) space: logic "0" (+12 V)

F Designation of Number of Bytes Remaining in the Buffer

When the computer's data transferring speed is faster than the printer's data processing speed, the printer buffer will gradually fill. The input capacity of the buffer is 8192 bytes. So when the number of bytes remaining in the buffer becomes 128, the printer instructs the computer to suspend the transfer of data by DTR or X/OFF signal, and the printer itself temporarily ceases to accept data.

When the number of free bytes in the buffer increases to the designated amount, the printer resumes accepting data.
This designated amount can be set as follows:

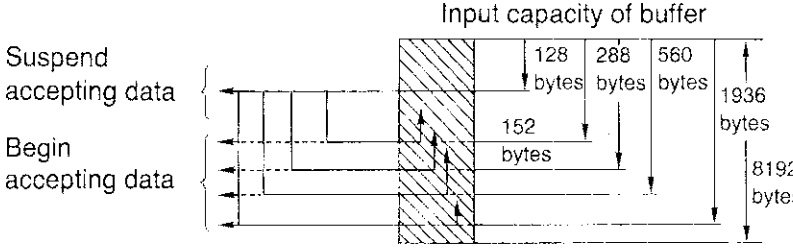
Buffer full recovery timing

Remaining Buffer Capacity	SW2-3	SW2-4
152 Bytes	OFF	OFF
288 Bytes	OFF	ON
560 Bytes*	ON	OFF
1936 Bytes	ON	ON

*Factory setting

DTR or X/ON-X/OFF sequence by number of bytes remaining in the buffer is as follows.

For DTR or X/ON-X/OFF signal



1. When the number of bytes remaining becomes 128, a signal is sent to the computer by DTR or X/OFF signal, and blocks the data input after this time.
2. When data processing continues after the blocking of data input, the number of bytes remaining in the buffer increases.
3. When the number of bytes remaining reaches the designated amount (152, 288, 560, 1936 bytes), the printer resumes accepting data.

G Self Test

Two (2) types of tests can be executed by setting DIP switches.

SW2-5	SW2-6	Mode
ON	OFF	Loop back
ON	ON	Hex. dump

(1) Loop back mode

Connect pin 2 (TXD) and pin 3 (RXD) of the serial interface. Turn on the power switch to execute. Data from $(20)_H$ to $(7E)_H$ will be transferred, received and printed.
(Only in RS-232C mode)

(2) Hex. Dump mode

In this mode, all data sent from the computer will be printed out in hexadecimal notation.

4. Appendix

A DIP Switch Functions and Settings

(1) DIP switch setting table

A. DIP switch 1 settings (SW1)

	Function	ON	OFF	Factory setting
SW1-1	Data length	7 bit	8 bit	OFF
SW1-2	Parity check	Valid	Invalid	OFF
SW1-3	Parity bit	Even	Odd	OFF
SW1-4	DTR signal porarity	Reversed	Normal	OFF
SW1-5		Refer to the chart Baud Rate Select		ON
SW1-6				OFF
SW1-7				OFF
SW1-8				OFF

B. DIP switch 2 settings (SW2)

	Function	ON	OFF	Factory setting
SW2-1	Not used	——	——	OFF
SW2-2	Buffering enable	enable	disable	ON
SW2-3	Buffer full recovery	Refer to the chart on page 17.		OFF
SW2-4	Buffer full recovery			ON
SW2-5	Self test enable	enable	disable	OFF
SW2-6	Self test mode select	hex. dump	loop back	OFF
SW2-7	DTR control	enable	disable	ON
SW2-8	Protocol	ETX/ACK	X/ON-X/OFF	OFF

(2) Baud Rate Setting Table (DIP SW1-5 ~ DIP SW1-8)

Switch / Baud Rate	SW1-5	SW1-6	SW1-7	SW1-8
75	ON	ON	ON	ON
110	ON	ON	ON	OFF
134.5	ON	ON	OFF	ON
150	ON	ON	OFF	OFF
200	ON	OFF	ON	ON
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200*	ON	OFF	OFF	OFF
1800	OFF	ON	ON	ON
2400	OFF	ON	ON	OFF
4800	OFF	ON	OFF	ON
9600	OFF	ON	OFF	OFF
19200	OFF	OFF	ON	ON

*Factory setting

(3) Buffer full recovery timing (DIP SW2-3 DIP SW2-4)

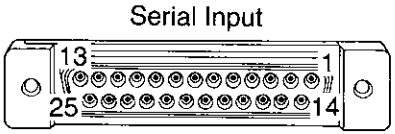
Remaining Buffer Capacity	SW2-3	SW2-4
152 Bytes	OFF	OFF
288 Bytes	OFF	ON
560 Bytes*	ON	OFF
1936 Bytes	ON	ON

*Factory setting

Note:

1. The 8K byte buffer can be enabled or disabled by SW2-2.
2. When the DTR control is enabled (SW2-7 is ON), X/ON-X/OFF, ETX/ACK protocol is automatically disabled.

B Connector Pin Configuration



Pin	Signal name	Flow
1	Frame Ground	
2	TXD (Transmit Data)	OUT
3	RXD (Receive Data)	IN
4	RTS (Request to Send)	OUT
5	NC	
6	DSR (Data Set Ready)	IN
7	SG (Signal Ground)	
8	DCD (Data Carrier Detector)	IN
9	NC	
10	NC	
11	REV (Reverse Channel)	OUT
12	NC	
13	NC	
14	NC	
15	NC	
16	NC	
17	TTY TXD (+) (Current Loop Transmit Data)	OUT
18	NC	
19	NC	
20	DTR (Data Terminal Ready)	OUT
21	NC	
22	NC	
23	TTY RXD return (–) (Current Loop Receive Data Return)	
24	TTY TXD return (–) (Current Loop Transmit Data Return)	
25	TTY RXD (+) (Current Loop Receive Data)	IN

- REV (Pin no. 11) and DTR (Pin no. 20) are connected in the interface.

Printed in Japan PJQX5811ZA F1288O1

Addendum To Operating Instruction Manual For KX-P19 RS232C Adapter

Printed in Japan

PJQX1237ZA

Changes have recently been made to the KX-P19 Interface in order to improve its performance. These changes are not identified in your manual. Please use this addendum for the following pages.

1. **Default protocol has been changed. Please ignore the information in your manual which relates to this item (pages 13 and 14).**

   From: X/ON-X/OFF

   To: DTR

Note: When setting protocol set the DIP switches as follows.

	X/ON-X/OFF	ETX/ACK	DTR
SW2-7	OFF	OFF	ON*
SW2-8	OFF	ON	X

*Factory setting X:Irrelevant

2. **The DIP switches and designation for the number of bytes remaining in the buffer (in your manual Item F) has been redesigned to minimize the potential for the loss of data.**

   Please ignore section F in your manual (pages 17~18) and use the followng information.

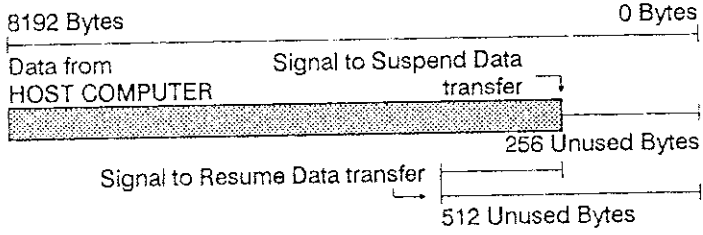
F Designation of Number of Bytes Remaining in the Buffer

When the computer's data transferring speed is faster than the printer's data processing speed, the printer buffer will gradually fill. The input capacity of the buffer is 8192 bytes. So when the number of bytes remaining in the buffer becomes either 16, 256, 1024, or 2048 bytes the printer instructs the computer to suspend data transfer.

The following is an example of handshaking between the host computer and the printer as per factory settings. This example is valid for X/ON-X/OFF or DTR.

UNUSED BYTES IN BUFFER

FACTORY SETTINGS
(SW2-1 SW2-3 SW2-4)
(OFF OFF ON)



The following section replaces the Text above G on page 18.

The signal to suspend data transfer sent by the printer may be transmitted when the unused portion of the buffer reaches either 16, 256, 1024, or 2048 bytes depending on switches 2-3 and 2-4. See chart below.

The signal to resume data transfer sent by the printer may be transmitted when the unused portion of the buffer increases by either 256 or 2048 bytes depending on switch 2-1. See chart below.

Suspend data transfer

Unused bytes in buffer	SW2-3	SW2-4
16 Bytes	OFF	OFF
256 Bytes*	OFF	ON
1024 Bytes	ON	OFF
2048 Bytes	ON	ON

Resume data transfer

Additional unused bytes in buffer	SW2-1
256 Bytes*	OFF
2048 Bytes	ON

*Factory setting

3. The following section replaces the chart on page 19 referred to as DIP switch 2 settings.

B. DIP switch 2 settings (SW2)

	Function	ON	OFF	Factory Setting
SW2-1	Resume data transfer	2048 Bytes	256 Bytes	OFF
SW2-2	Buffering enable	enable	disable	ON
SW2-3	Suspend data transfer	Refer to the chart on page 18		OFF
SW2-4	Suspend data transfer			ON
SW2-5	Self test enable	enable	disable	OFF
SW2-6	Self test mode select	hex. dump	loop back	OFF
SW2-7	DTR control	enable	disable	ON
SW2-8	Protocol	ETX/ACK	X/ON-X/OFF	OFF

4. The following section replaces the chart on page 20 referred to as (3) Buffer full recovery timing(DIP SW2-3 DIP SW2-4).

(3) Suspend data transfer timing (DIP SW2-3 DIP SW2-4).

Unused Bytes in Buffer	SW2-3	SW2-4
16 Bytes	OFF	OFF
256 Bytes*	OFF	ON
1024 Bytes	ON	OFF
2048 Bytes	ON	ON

*Factory setting